

ABSTRACT

A cell for the electrowinning of aluminium comprising one or more anodes (10), each having a metal-based anode substrate, for instance comprising a metal core (11) covered with an metal layer 12, an oxygen barrier layer (13), one or more intermediate layers (14,14A,14B) and an iron layer (15). The anode substrate is covered with an electrochemically active iron oxide-based outside layer (16), in particular a hematite-based layer, which remains dimensionally stable during operation in a cell by maintaining in the electrolyte a sufficient concentration of iron species. The cell operating temperature is sufficiently low so that the required concentration of iron species in the electrolyte (5) is limited by the reduced solubility of iron species in the electrolyte at the operating temperature, which consequently limits the contamination of the product aluminium by iron to an acceptable level. The iron oxide-based layer (16) is usually an applied coating or an oxidised surface of a substrate (11,12,13,14,15), the surface (15) of which contains iron.